

REC'D. 08 JUN 2005

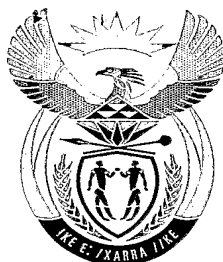
WIPO

PCT

*Sertifikaat*

REPUBLIEK VAN SUID-AFRIKA

PATENT KANTOOR  
DEPARTEMENT VAN HANDEL  
EN NYWERHEID



*TB/08/00074*

*Certificate*

REPUBLIC OF SOUTH AFRICA

PATENT OFFICE  
DEPARTMENT OF TRADE AND  
INDUSTRY

Hiermee word gesertifiseer dat  
This is to certify that

the documents annexed hereto are true copies of:

Application forms P.1 and P.3, provisional specification and drawings of  
South African Patent Application No. 2004/0354 as originally filed in the  
Republic of South Africa on 16 January 2004 in the name of EMF  
TECHNOLOGIES CORPORATION for an invention entitled: "AN ANTENNA".

Geteken te

**PRETORIA**

Signed at

in die Republiek van Suid-Afrika, hierdie

in the Republic of South Africa, this

dag van

18

day of

April 2005

*[Signature]*  
Registrar of Patents

**PRIORITY  
DOCUMENT**

SUBMITTED OR TRANSMITTED IN  
COMPLIANCE WITH RULE 17.1(a) OR (b)

REPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978  
APPLICATION FOR A PATENT AND  
ACKNOWLEDGEMENT OF RECEIPT  
(Section 30(1) Regulation 22)

REPUBLIC OF SOUTH AFRICA  
FORM P.1  
(to be lodged in duplicate)  
16.01.04  
R 060.00  
ISSUANCE  
CLASS & REF. BY: 160104/000000000000

THE GRANT OF A PATENT IS HEREBY REQUESTED BY THE UNDERMENTIONED APPLICANT  
ON THE BASIS OF THE PRESENT APPLICATION FILED IN DUPLICATE

21 01 PATENT APPLICATION NO 20 04 / 0 3 5 4

71 FULL NAME(S) OF APPLICANT(S)

EMF TECHNOLOGIES CORPORATION

ADDRESS(ES) OF APPLICANT(S)

PO Box 727, Landsome Road, The Valley, Anguilla,  
BRITISH WEST INDIES TV102P

54 TITLE OF INVENTION

"AN ANTENNA"

Only the items marked with an "X" in the blocks below are applicable.

☐ THE APPLICANT CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P.2. The earliest priority claimed is

Country:

No:

Date:

☐ THE APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO

21 01

☐ THIS APPLICATION IS A FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON  
APPLICATION NO

21 01

THIS APPLICATION IS ACCOMPANIED BY:

- |                                     |  |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | A single copy of a provisional specification of 6 pages                          |
| <input checked="" type="checkbox"/> | Drawings of 4 sheets   |
| <input type="checkbox"/>            | Publication particulars and abstract (Form P.8 in duplicate) (for complete only) |
| <input type="checkbox"/>            | A copy of Figure of the drawings (if any) for the abstract (for complete only)   |
| <input checked="" type="checkbox"/> | An assignment of invention   |
| <input type="checkbox"/>            | Certified priority document(s). (State quantity)                                 |
| <input type="checkbox"/>            | Translation of the priority document(s)  |
| <input type="checkbox"/>            | An assignment of priority rights   |
| <input type="checkbox"/>            | A copy of Form P.2 and the specification of RSA Patent Application No            |
| <input checked="" type="checkbox"/> | Form P.2 in duplicate  |
| <input checked="" type="checkbox"/> | A declaration and power of attorney on Form P.3                                  |
| <input type="checkbox"/>            | Request for ante-dating on Form P.4  |
| <input type="checkbox"/>            | Request for classification on Form P.9   |
| <input type="checkbox"/>            | Request for delay of acceptance on Form P.4                                      |
| <input type="checkbox"/>            | Extra copy of informal drawings (for complete only)                              |

21 01

74 ADDRESS FOR SERVICE: Adams & Adams, Pretoria

Dated this 16th day of January 2004

ALAN LEWIS  
ADAMS & ADAMS  
APPLICANTS PATENT ATTORNEYS

The duplicate will be returned to the applicant's address for service as  
proof of lodging but is not valid unless endorsed with official stamp

REGISTRAR OF PATENTS DESIGNS,  
TRADE MARKS AND COPYRIGHT

2004-01-16  
OFFICIAL DATE STAMP

REGISTRATEUR VAN PATENTE, MODELLE,  
HANDELSMERKE EN OUTEURSREG

REGISTRAR OF PATENTS

ADAMS & ADAMS  
PRETORIAREPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978  
DECLARATION AND POWER OF ATTORNEY  
(Section 30 - Regulation 8, 22(i)(e) and 33)

FORM P.3

PATENT APPLICATION NO		A&A Ref: V16085 AL/dcd	LODGING DATE	
21	01	• • 2004 / 0354	22	16 January 2004

FULL NAME(S) OF APPLICANT(S)	
71	EMF TECHNOLOGIES CORPORATION

FULL NAME(S) OF INVENTOR(S)	
72	KOKORIN, Boris

EARLIEST PRIORITY CLAIMED	COUNTRY	NUMBER	DATE
	33	NIL	31
		NIL	32
			NIL

NOTE: The country must be indicated by its International Abbreviation - see schedule 4 of the Regulations

TITLE OF INVENTION	
54	"AN ANTENNA"

I/We  
Cameron Malcolm Scott  
hereby declare that :-

1. ~~I/we are the applicant(s) mentioned above;~~
- \*\*2. I/we have been authorized by the applicant(s) to make this declaration and have knowledge of the facts herein stated in the capacity of **Director** of the applicant(s);
- \*\*\*3. the inventor(s) of the abovementioned invention is/are the person(s) named above and the applicant(s) has/have acquired the right to apply by virtue of an assignment from the inventor(s);
4. to the best of my/our knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent;
- \*\*\*\*5. ~~this is a convention application and the earliest application from which priority is claimed as set out above is the first application in a convention country in respect of the invention claimed in any of the claims; and~~
6. the partners and qualified staff of the firm of ADAMS & ADAMS, patent attorneys, are authorised, jointly and severally, with powers of substitution and revocation, to represent the applicant(s) in this application and to be the address for service of the applicant(s) while the application is pending and after a patent has been granted on the application.

SIGNED THIS 14th DAY OF January 2004

For and on behalf of  
Full Names: EMF TECHNOLOGIES CORPORATION  
Capacity of Signatory: Cameron Malcolm SCOTT  
Director

(no legalization necessary)

- \* In the case of application in the name of a company, partnership or firm, give full names of signatory/signatories, delete paragraph 1, and enter capacity of each signatory in paragraph 2.
- \*\* If the applicant is a natural person, delete paragraph 2.
- \*\*\* If the right to apply is not by virtue of an assignment from the inventor(s), delete "an assignment from the inventor(s)" and give details of acquisition of right.
- \*\*\*\* For non-convention applications, delete paragraph 5.

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PATENT ATTORNEYS  
PRETORIA

FORM P6

REPUBLIC OF SOUTH AFRICA  
Patents Act, 1978

**PROVISIONAL SPECIFICATION**  
(Section 30 (1) - Regulation 27)

21	01	OFFICIAL APPLICATION NO
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22	LODGING DATE
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16 January 2004

2004 / 0354

71	FULL NAME(S) OF APPLICANT(S)
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EMF TECHNOLOGIES CORPORATION

72	FULL NAME(S) OF INVENTOR(S)
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KOKORIN, Boris

54	TITLE OF INVENTION
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"AN ANTENNA"

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**THIS INVENTION** relates to an antenna.

According to the invention there is provided a spheroidal antenna.

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The antenna may have at least one winding that is spheroidally configured.

The antenna may have a plurality of windings, each having a start and an end. A pair of windings may be adjacent one another.

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The, or each, winding may be of the multi-solenoid type.

The antenna may have a plurality of layers. With such a multi-layer embodiment, the layers may be at an angle to one another.

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The antenna may have a spheroidal winding, ie a three-dimensional spiral about an axis, the radius of the winding progressively increasing and then decreasing.

Further, the antenna may have a primary spheroidal winding with a secondary winding wound toroidally about the primary winding, in a Tokamak manner. Either, or both, of the primary and secondary windings may be of the multi-solenoid type.

5           The antenna may have a spheroidal former on which the or each winding is wound. The former may be hollow.

The invention will now be described, by way of examples, with reference to the accompanying diagrammatic drawings, in which:

10           Figure 1 shows a first order multi-solenoid conductor;

Figure 2 shows a plan view of a first embodiment of an antenna in accordance with the invention, which uses the first order multi-solenoid conductor of Figure 1;

Figure 3 shows a sectioned view of the antenna of Figure 2 along line III-III;

15           Figure 4 shows a plan view of a second embodiment of an antenna in accordance with the invention;

Figure 5 shows a sectioned view of the antenna of Figure 4 along line V-V;

Figure 6 shows a sectioned view of a third embodiment of an antenna in accordance with the invention; and

20           Figure 7 shows a fourth embodiment of an antenna in accordance with the invention.

Referring to Figure 1, a length of a first order multi-solenoid conductor is referred to generally by reference numeral 10. It will be seen that the conductor 10 comprises a length of conducting wire 12 that is wound helicoidally about a secondary insulating fibre core 14, which, in turn, is helicoidally wound about a primary insulating fibre core 16. An insulating plastic covering 18 covers the wire 12 and secondary core 14. The primary core 16 has a diameter of about 1.5mm; the secondary core 14 a diameter of about 1.2mm; and the wire 12 has a thickness of about 0.4mm. Thus, the conductor 10 has a diameter of about 5.5mm. The pitch of the wire 12 wound on the secondary core 14 is about 1mm and the pitch of the secondary core 14 on the primary core 16 is about 4mm. The wire 12 is of copper or aluminium. It will be appreciated that, if the wire 12 were to be replaced by a further core, on which the wire is helicoidally wound, this further core with the wire thereon being helicoidally wound on the secondary core, a second order multi-solenoid would result.

Referring now to Figure 2 and 3, a first embodiment of a spheroidal antenna 20 in accordance with the invention is shown. It will be seen that the antenna 20 has a hollow spheroidal former 22 on which there is a spheroidal winding 24 comprised of the second order multi-solenoid conductor 10. It will be seen that the conductor 10 is wound on the former 22 in a spheroidal manner about an axis 26 of the former 22, to have a progressively increasing and then decreasing radius. The winding 24 has ends 28 and 30, one of which constitutes a start of the winding 24 and the other

the end thereof.

Referring to Figures 4 and 5, a second embodiment 40 of a spheroidal antenna in accordance with the invention is shown. This embodiment 40 also has a  
5 spheroidal former 22 on which there are an inner spheroidal winding 42 and an outer composite spheroidal winding 44. The inner winding 42 is the same as the winding 24 of the embodiment 20. The outer winding 44 comprises a winding 46 that is the same as the windings 42 and 22, on which is wound a further winding 48 of a second order multi-solenoid conductor 10, in a Tokamak manner. Thus, this antenna 40 has three  
10 windings arranged in two layers. It will further be appreciated that the windings 42 and 46 are about orthogonal axes, so that the turns thereof are at right angles to one another.

A further embodiment of a spheroidal antenna in accordance with the  
15 invention is shown in Figure 6, by reference numeral 60. This antenna 60 has four layers of windings 62, 64, 66 and 68 on a former 22. These windings are essentially similar and are each like the winding 24, with the windings 62 and 66 having the same axis and the windings 64 and 68 having the same axis, the two axes being orthogonal, such that the turns of each layer are at right angles to the turns of the layer above  
20 and/or below.



A still further embodiment of a spheroidal antenna 80 in accordance with the invention is shown in Figure 7. This antenna 80 has two similar windings 82 and 84 that are each similar to the winding 22 and are wound about the same axis to be interlaced so that the turns of the two windings are adjacent one another.

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DATED THIS 16<sup>th</sup> day of JANUARY 2004



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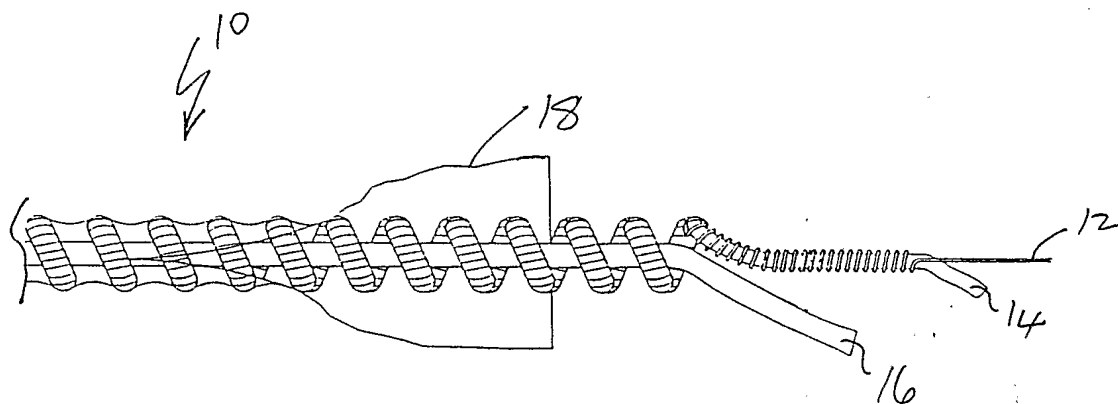


FIG. 1

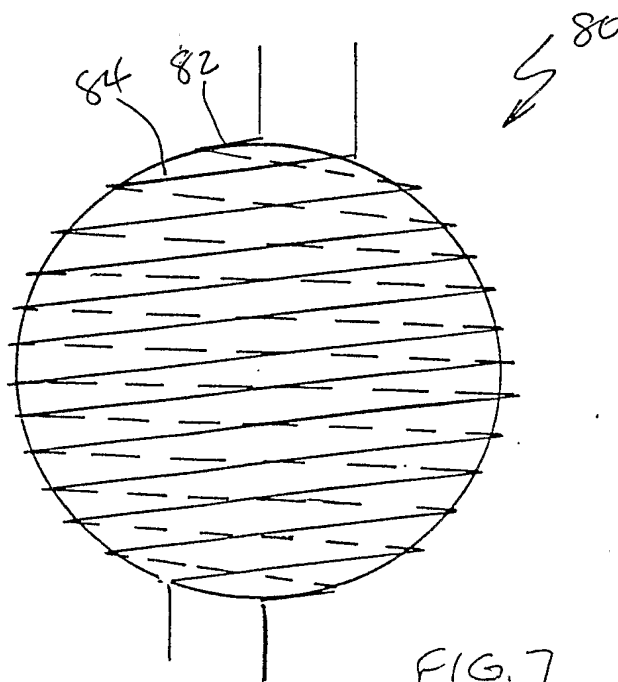
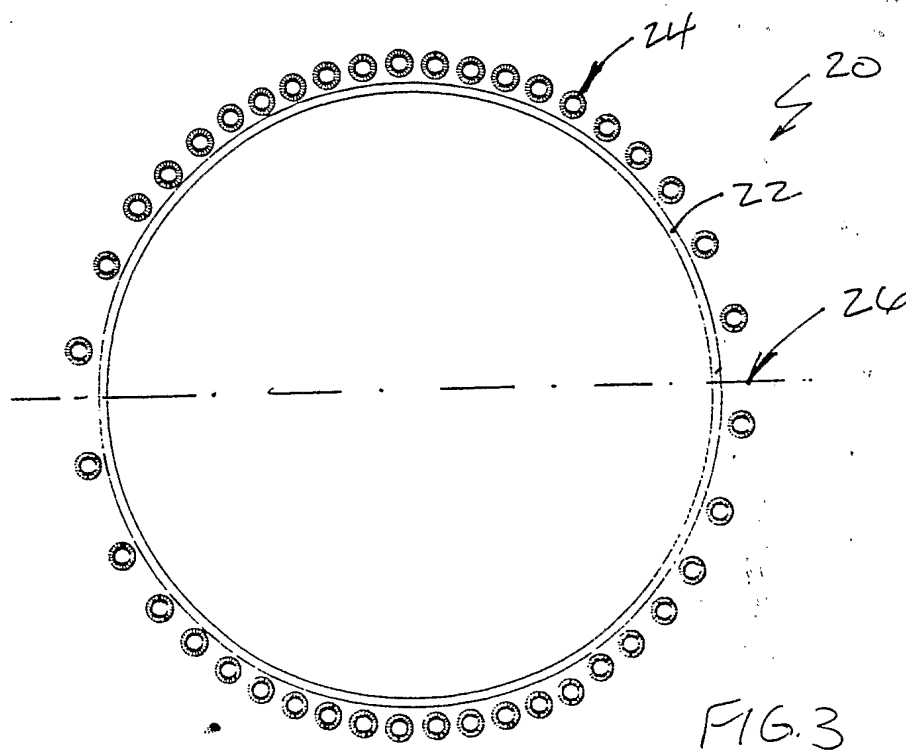
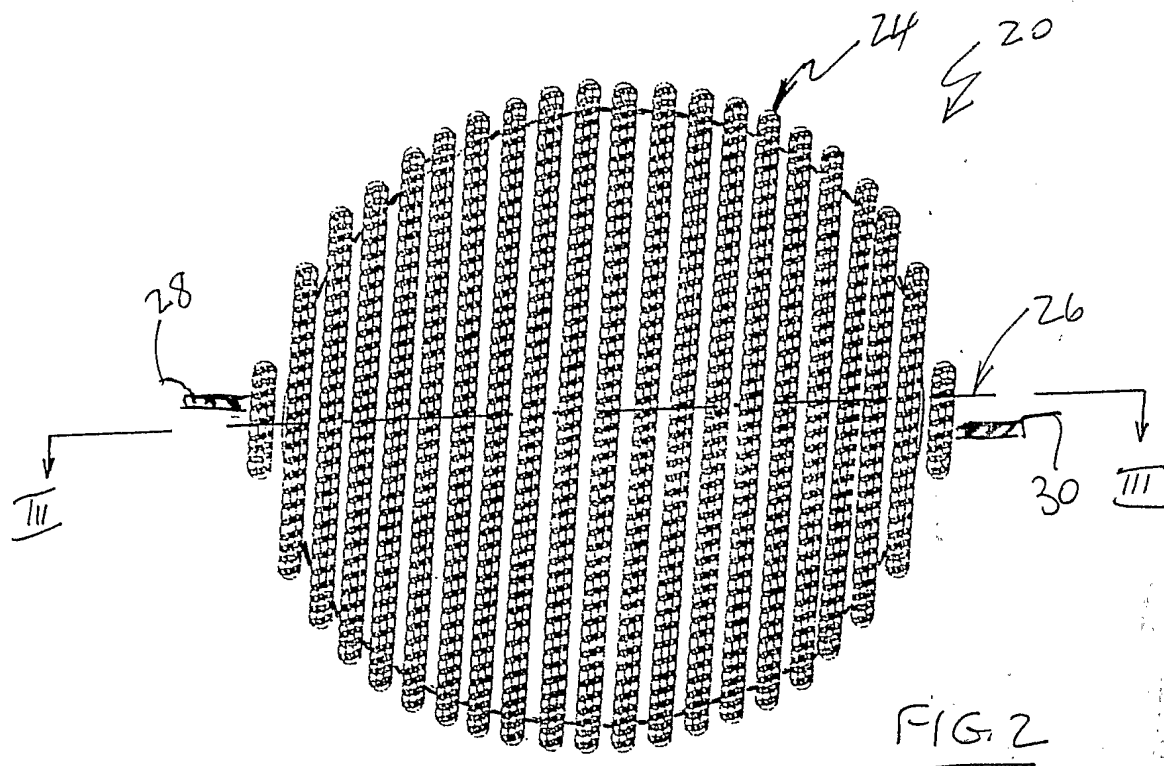
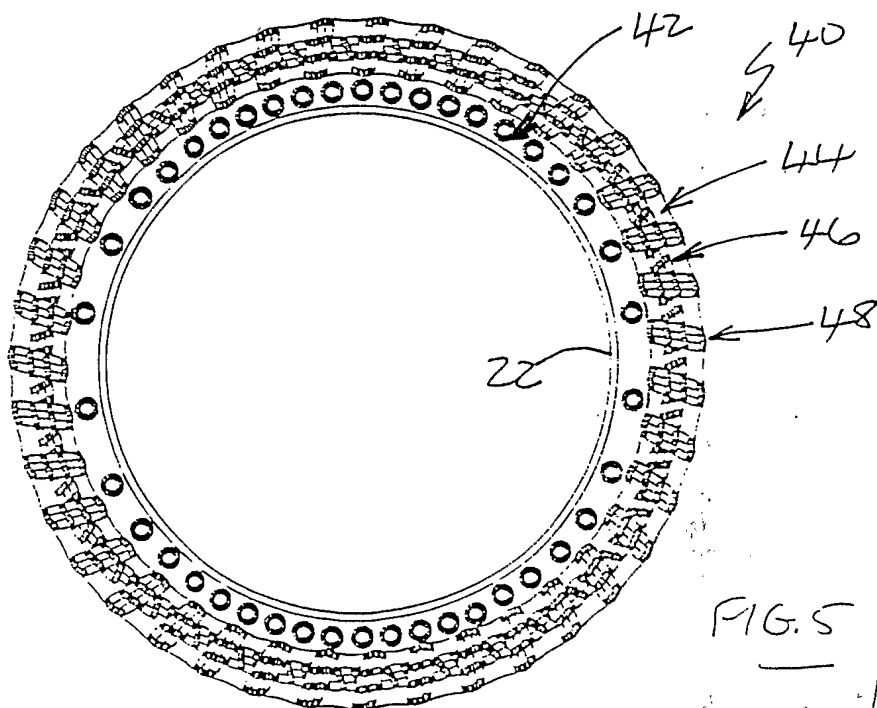
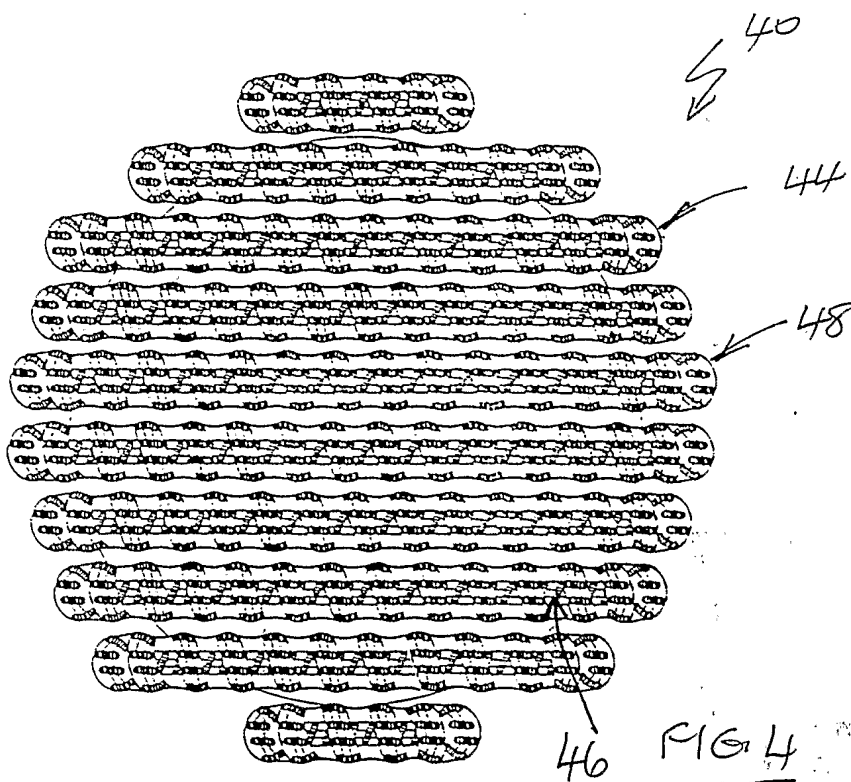


FIG. 7

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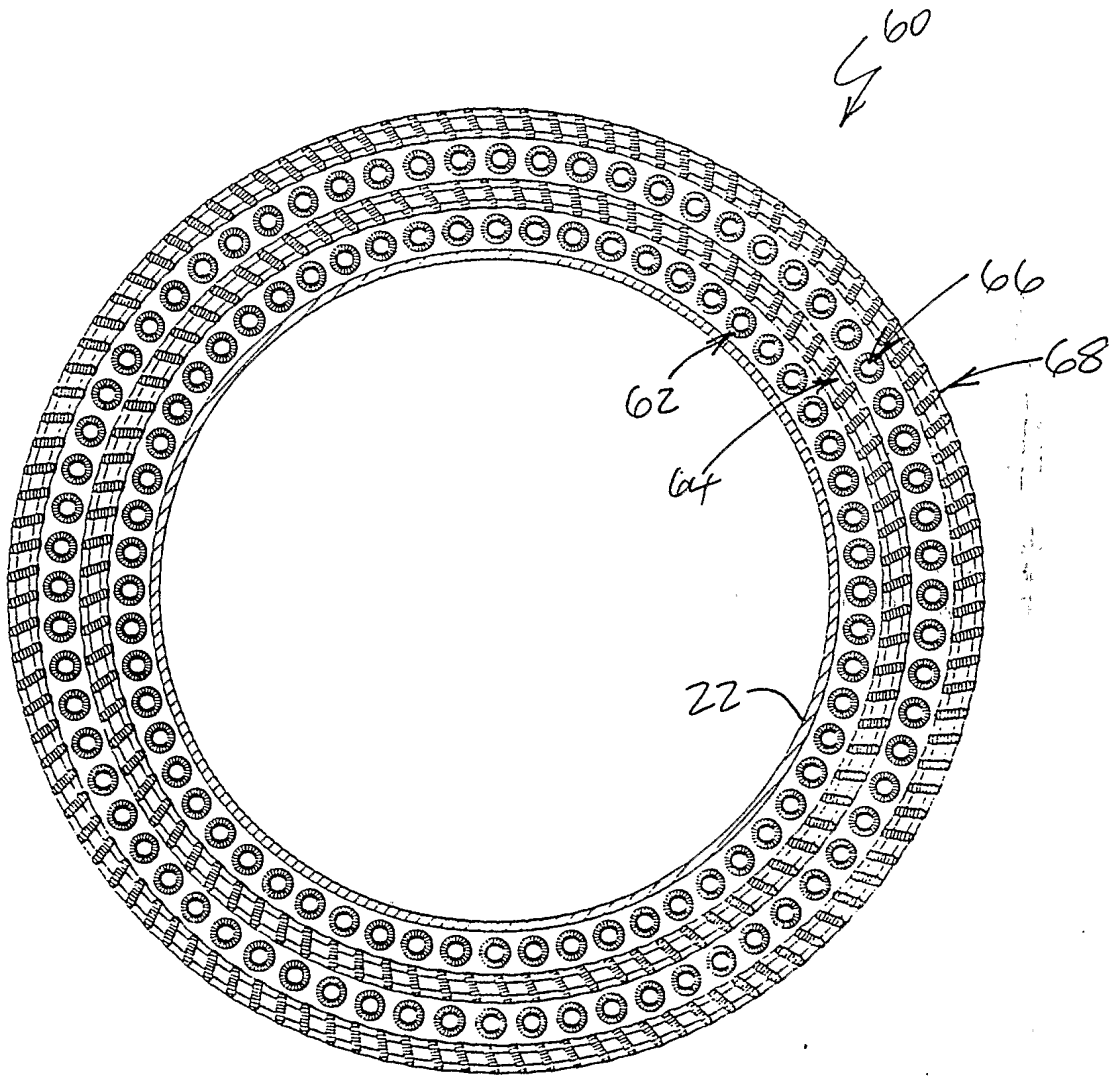


FIG. 6

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